


# RUFFED GROUSE AND AMERICAN WOODCOCK STATUS IN MICHIGAN, 2002

**Michigan Department of Natural Resources**
**Wildlife Report No. 3378 August 2002**
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Ruffed grouse (*Bonasa umbellus*) and American woodcock (S*colopax minor*) are popular forest game birds that are pursued by about 125,000 Michigan hunters annually. Department of Natural Resources (DNR) surveys indicate that each hunter spends an average of 7 to 8 days hunting grouse and woodcock each year, adding up to almost a million days of recreation in Michigan annually. Non-hunters also place a high value on grouse and woodcock. Many people enjoy listening to or watching drumming male grouse and the courtship displays of woodcock. Additionally, grouse and woodcock are important components of early successional forest habitat and indicators of healthy forest ecosystems.

## METHODS

The DNR uses several surveys to monitor ruffed grouse and woodcock populations, including hunter cooperators and spring breeding surveys. Cooperator surveys are based on a sample of hunters who record numbers of hours hunted and ruffed grouse and woodcock flushed each day. The cooperators are volunteer hunters who express an interest and are willing to maintain hunting records every year. Data obtained from cooperating hunters are summarized as the number of grouse or woodcock flushed per hour of hunting. Flush rates provide an early indicator of harvest, but the final estimates of hunting effort and harvest come from a mail survey of randomly selected hunters.

DNR personnel and volunteers conduct spring breeding surveys of ruffed grouse and woodcock using roadside routes. Each route has listening stops that are consistent from year to year. The number of ruffed grouse drums or woodcock heard during a fixed time



Printed by Authority of: P.A. 451 of 1994
Total Number of Copies Printed: .....750
Cost per Copy: .....$0.60
Total Cost: .....$449.49

Michigan Department of Natural Resources


A contribution of Federal Aid in Wildlife Restoration, Michigan Project W-127-R.

IC 2578-1 (08/05/2002)

interval is recorded at each stop. Because the timing of breeding and habitat preferences differ for the two species, separate surveys are conducted. The woodcock breeding survey is coordinated by the United States Fish and Wildlife Service (USFWS) in cooperation with the DNR. The ruffed grouse routes were established in locations of known grouse populations. The woodcock routes were also located on non-randomly located routes prior to 1968. Beginning in 1968, the routes were relocated within randomly-chosen 10-minute blocks (Kelley 2002). Data for both surveys are summarized as the number of woodcock or grouse heard per survey route (Luukkonen et al. 1998). In addition, woodcock cooperators band over 1,000 woodcock annually to monitor recruitment.

## RESULTS AND DISCUSSION

### Review of Recent Hunting Seasons

#### *Ruffed Grouse*

Hunter records were available from 128 cooperators who hunted in 2001. Hunting effort for the cooperators in 2001 was 5,968 hours. The number of ruffed grouse flushed per hour by cooperators statewide declined from 2000. Grouse flush rates were highest in Zone 1 (Upper Peninsula), followed by Zones 2 (Northern Lower Peninsula), and 3 (Southern Lower Peninsula), respectively (Figure 1 and Appendix A). The highest average flush rates reported by cooperators were during October 16-31 in Zone 1 and December 1-15 in Zone 2 (Table 1). In Zone 3, the recorded flush rates were highest during September 15-20. Such variations in flush rates were likely a result of regional hunting pressure.

Analysis of 2001 harvest mail survey data indicated a harvest of about 381,000 grouse (Frawley 2002). Harvest of grouse seems to follow grouse population cycles (Figures 1, 2, and 3). This population cycle appears similar to the fluctuations observed in Wisconsin and Minnesota (Figure 4).

The number of grouse hunters in Michigan has remained relatively stable despite periodic declines in grouse numbers, indicating that even if grouse numbers are down and harvest is low, hunters will still pursue grouse. The proportion of small game license purchasers who hunted ruffed grouse has actually increased since 1958, as the number of small game license holders has steadily decreased and grouse hunters remained stable (Figure 2).

#### *American Woodcock*

In 2001, the number of woodcock flushed per hour by cooperators was higher in Zone 1 and Zone 2 than in 2000, but lower in Zone 3. Woodcock flush rates were highest in Zone 2, followed by Zones 1 and 3, respectively (Figure 5 and Appendix B). Average flush rates began to decline during the October 16-October 31 period in Zones 1, 2, and

3 (Table 1). Seasonal changes in woodcock flush rates most likely reflect southward fall migrations (Luukkonen et al. 1998).

From 1958 to 1976 there was an increase in woodcock harvest in Michigan. In 1976 there was a record harvest of 390,000 birds. During that year there were approximately 126,000 woodcock hunters spending about 908,000 days afield. Since that all time record harvest, there have been fluctuations in harvest to the present level (Figure 6). Analysis of 2001 data indicated a Michigan harvest of about 154,000 woodcock (Frawley 2002). There were approximately 51,000 woodcock hunters in 2001 and they spent about 323,000 days afield (Figure 6).

## Spring Breeding Surveys

### *Ruffed Grouse*

Ruffed grouse drumming counts were conducted statewide along 154 survey routes in April and May 2002. A statewide drumming survey was also conducted in 2001, which provided data from 152 routes. A paired t-test was performed on 142 routes run in both 2001 and 2002. Statewide, the number of drums heard per route was similar in 2001 and 2002 (paired t=-0.54, P=0.59). The number of drums heard per route was 10.45 in 2001 and 10.11 in 2002. The breeding index in Zone 1 decreased from 12.6 to 12.1 and Zone 2 decreased from 9.2 to 8.1, while Zone 3 increased from 7.8 to 9.0 in 2002.

Ruffed grouse have ten-year cycles in abundance over much of Canada, Alaska, and the Great Lakes states of Wisconsin, Minnesota and Michigan (Rusch et al. 1999). Biologists in Minnesota have conducted drumming surveys since 1949 and grouse cycles have peaked near the end of each decade (Dexter 1999, Figure 4). Many theories have been proposed to explain these cycles including diseases, weather, forest fires, sunspots, starvation, crowding, predators, genetic changes, and chance (Rusch 1989).

The low in grouse abundance in recent times occurred during 1992-1994 for most of the state (Figures 1, 2, and 3). The largest increases in grouse abundance since these lows has occurred in Zone 1 (Figures 1 and 3). Hunters should note that increased or decreased abundance of animals at a regional scale does not ensure the same trend locally.

### *American Woodcock*

Results of woodcock breeding surveys were based on preliminary analysis of data from 90 survey routes (Kelley 2002). Woodcock in Michigan increased 13.7% from 2001, but this was not a statistically significant difference ($P > 0.10$). The breeding woodcock index decreased 7.9% from 2001 levels in the entire central region (Illinois, Indiana, Manitoba, Michigan, Minnesota, Ohio, Ontario, and Wisconsin). However, Minnesota was the only area that experienced statistically significant decreases. Although there was an increase this year in Michigan's breeding survey, the state has experienced a

statistically significant long-term decline of 1.5% per year since 1968. An average of 3.36 singing-males was heard per route in Michigan. In the central region, an average of 1.99 singing-males was heard per route.

The 2001 woodcock recruitment index of 1.3 immature woodcock per adult female was slightly up from the 2000 index of 1.2, but 23% below the long-term regional average of 1.7 (Kelley 2002). Woodcock banders in Michigan spent approximately 2,000 hours afield in 2002 and banded 1,042 chicks. The average brood size observed was 3.1. Woodcock banded per 100 hours may be useful as an index of local woodcock production trends. In 2002 there were 68.4 chicks observed and 51.4 chicks banded per 100 hours of search time. Last year there were 77.6 chicks observed and 61.9 chicks banded per 100 hours of search time and the average brood size observed was 3.1.

The long-term reduction in the woodcock population index raises questions and concerns about available habitat and the effects of hunting. The declining availability of quality habitat is believed to be a primary cause for the decline in the population (Dessecker and Pursglove 2000). In an attempt to halt the population decline, the U.S. Fish and Wildlife Service has adjusted woodcock hunting season dates or reduced bag limits 4 times since 1968.

Researchers have been examining the effects of hunting on woodcock survival rates in Maine, New Hampshire, Vermont, and Pennsylvania (McCabe 2000). Survival rates were similar between hunted and nonhunted sites, which suggests that local hunting effort is not a significant factor in woodcock population declines. More research is needed, however, to determine if the mortality in the nonhunted sites was atypical and also if hunting mortality is excessive in other regions. Similar research is being conducted in Michigan, Minnesota, and Wisconsin. Field work began in Minnesota last fall (Doherty and Anderson 2002). Michigan and Wisconsin have designated their study sites and field work has begun. Each state will estimate woodcock mortality on both hunted and nonhunted sites during a 3-year period. In Michigan, an area in Dickinson county will be closed to woodcock hunting beginning in 2002. A map of this area can be found in the 2002-2003 Michigan Hunting and Trapping Guide.

## 2002 Grouse and Woodcock Hunting Forecast

### *Ruffed Grouse*

The outlook for the upcoming season does not look as promising as it did in 1999 and 2000, but like last year, it still looks favorable for grouse. Survey data suggests that the Michigan population peaked in 1999. The population is most likely on the downward slope of the cycle. If spring production was favorable, hunters in Michigan may take 390,000 grouse this fall.

### *American Woodcock*

Woodcock hunters this year may expect a season similar to 2000. The U.S. Fish and Wildlife Service mandated that the woodcock hunting season open no earlier than the Saturday closest to September 22. This year the opening date is September 21. Hunters may take 150,000 woodcock this fall. While good numbers of grouse and woodcock can be found in all parts of Michigan, the highest densities are located in the northern two-thirds of the state.

## ACKNOWLEDGEMENTS

We thank all the cooperators who kept and provided grouse and woodcock hunting records and participated in banding woodcock. Steve Merchant and Adam Bump provided data for Minnesota and Wisconsin drumming counts. Many DNR employees and volunteers conducted spring breeding surveys and assisted in data entry. Pete Squibb, Brian Frawley, David Luukkonen, and Scott Whitcomb reviewed an earlier version of this report. Portions of this report were copied in whole or in part from previous status reports. Similar reports may be found at www.michigan.gov/dnr.

*Note:* Individuals who would like to become a grouse and woodcock hunting cooperator are encouraged to send in their name and address to Wildlife Division, Attention: Grouse and Woodcock Cooperator Program, PO Box 30444, Lansing, MI 48909 or call 517-373-1263.

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Table 1. Ruffed grouse and American woodcock flush rates, by two week intervals, as reported by cooperating hunters in 2001.

| | Zone | | |
|---|---|---|---|
| Species and dates | 1 | 2 | 3 |
| Ruffed grouse | | | |
| September 15 - 30 | 1.54 | 1.82 | 1.58 |
| October 1 - 15 | 1.96 | 1.44 | 1.17 |
| October 16 - 31 | 2.31 | 1.68 | 1.31 |
| November 1 - 14 | 2.07 | 1.84 | 1.27 |
| December 1 - 15 | | 1.97 | 1.20 |
| December 16 - January 1 | | 1.38 | 1.19 |
| American woodcock | | | |
| September 15 - 30 | 1.02 | 2.11 | 1.78 |
| October 1 - 15 | 1.33 | 2.22 | 1.70 |
| October 16 - 31 | 1.26 | 1.32 | 1.17 |
| November 1 - 14 | 0.04 | 0.10 | 0.30 |
| December 1 - 15 | | 0.00 | 0.01 |
| December 16 - January 1 | | 0.04 | 0.00 |

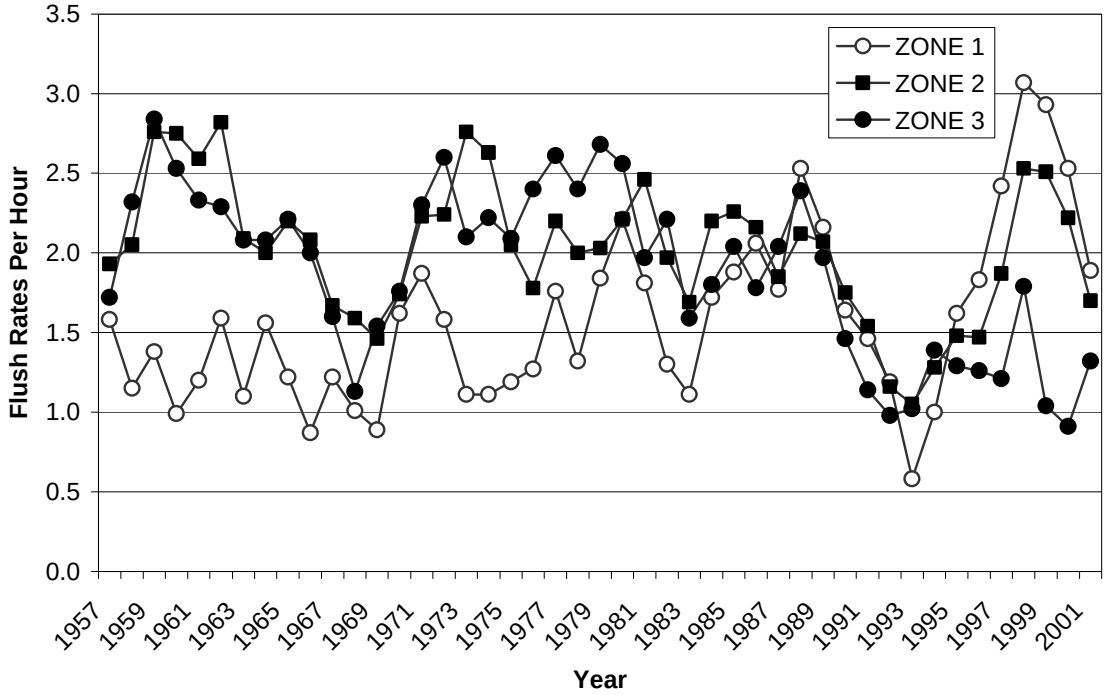



Figure 1. Ruffed grouse flush rates reported by cooperating hunters, 1957-2001.

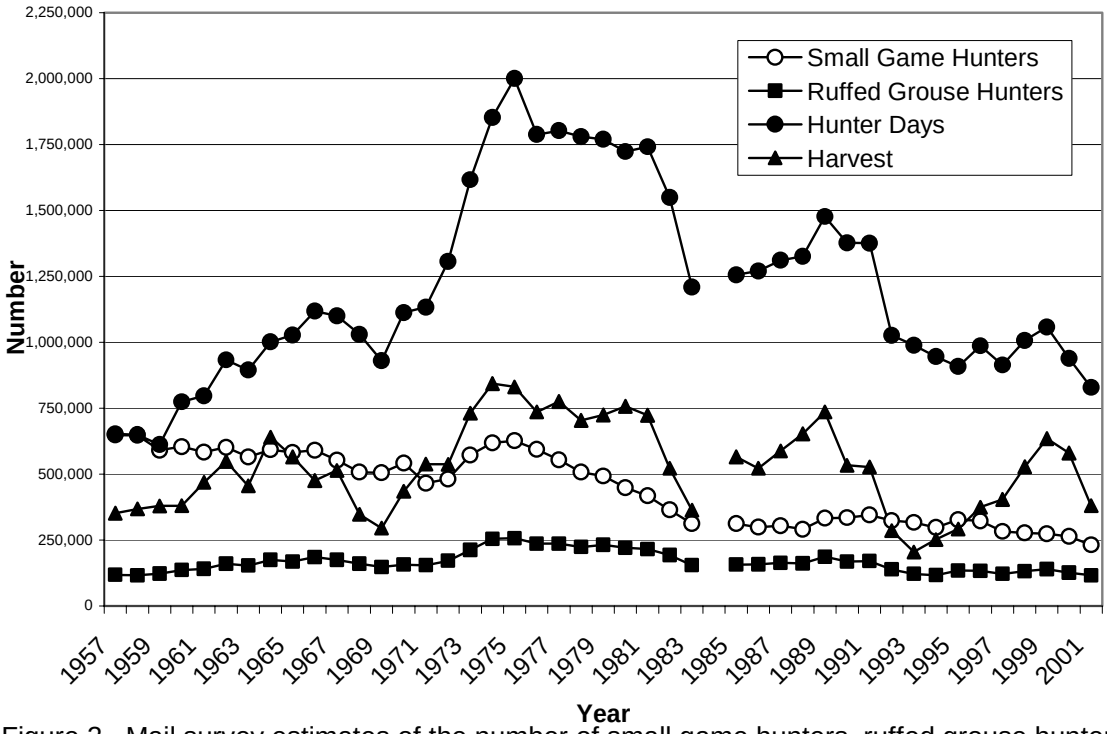



Figure 2. Mail survey estimates of the number of small game hunters, ruffed grouse hunters, ruffed grouse harvest, and hunter days in Michigan, 1957-2001 (estimates are not available for 1984).

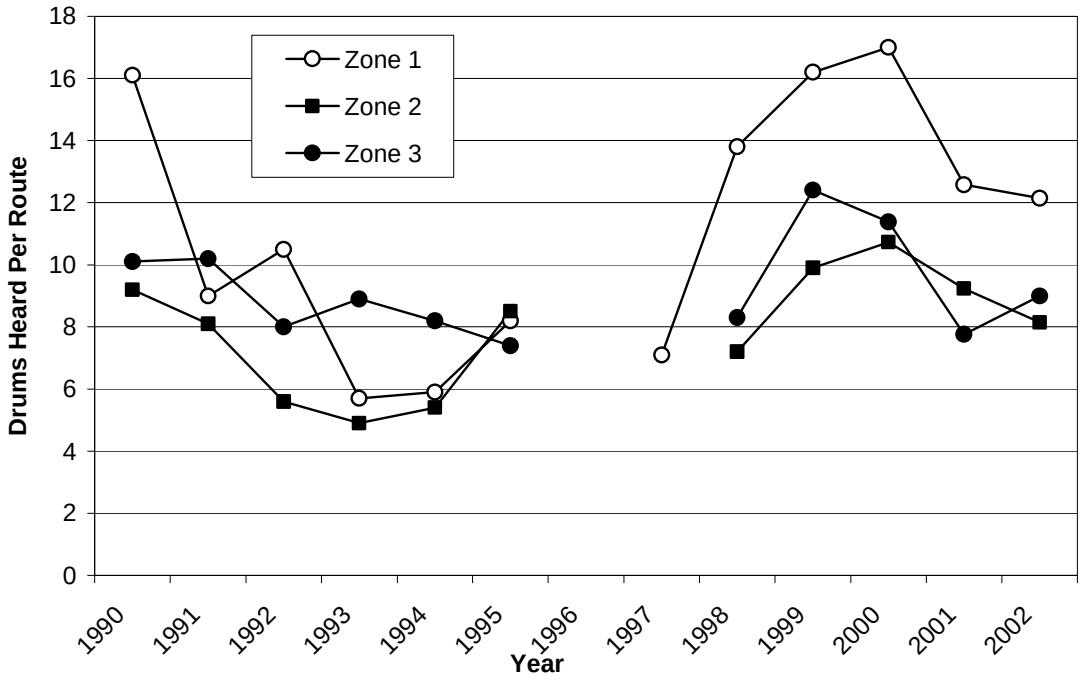



Figure 3. Ruffed grouse breeding population index (drums per route) in Michigan, 1990-2002. Drumming surveys were not conducted in 1996 and were conducted only in Zone 1 in 1997.

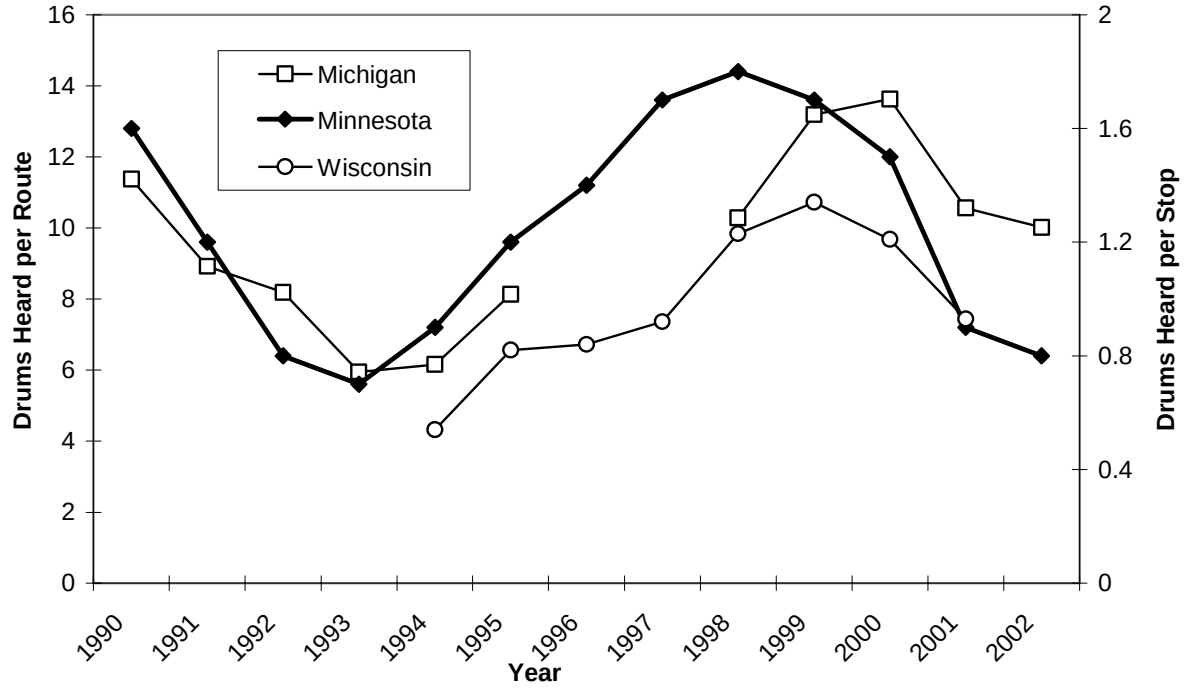



Figure 4. Ruffed grouse breeding population indices from Michigan (drums per route) and Minnesota and Wisconsin (drums per stop), 1990-2002. Michigan statewide data is not available for 1996 and 1997.

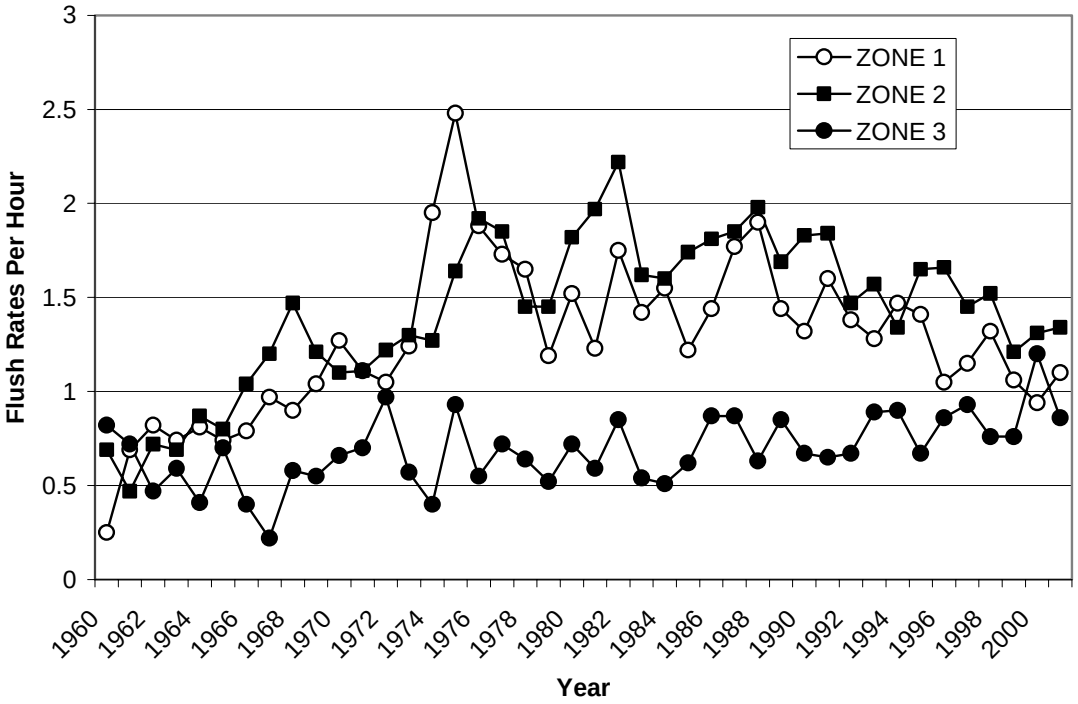



Figure 5. American woodcock flush rates reported by cooperating hunters, 1960-2001.

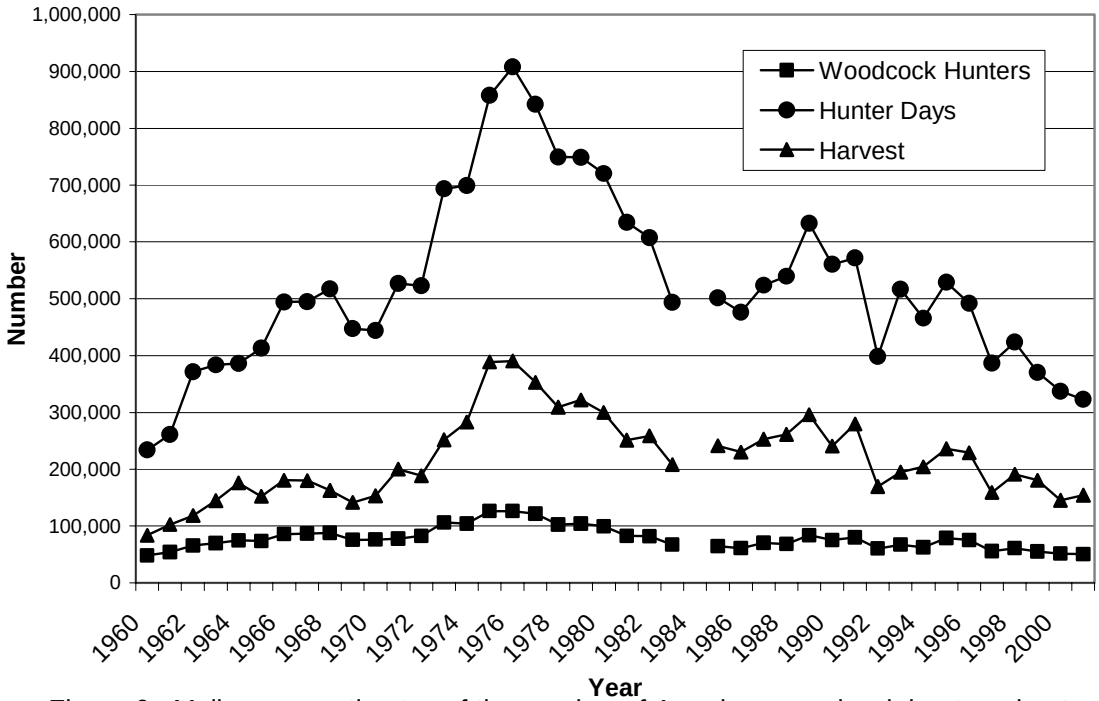
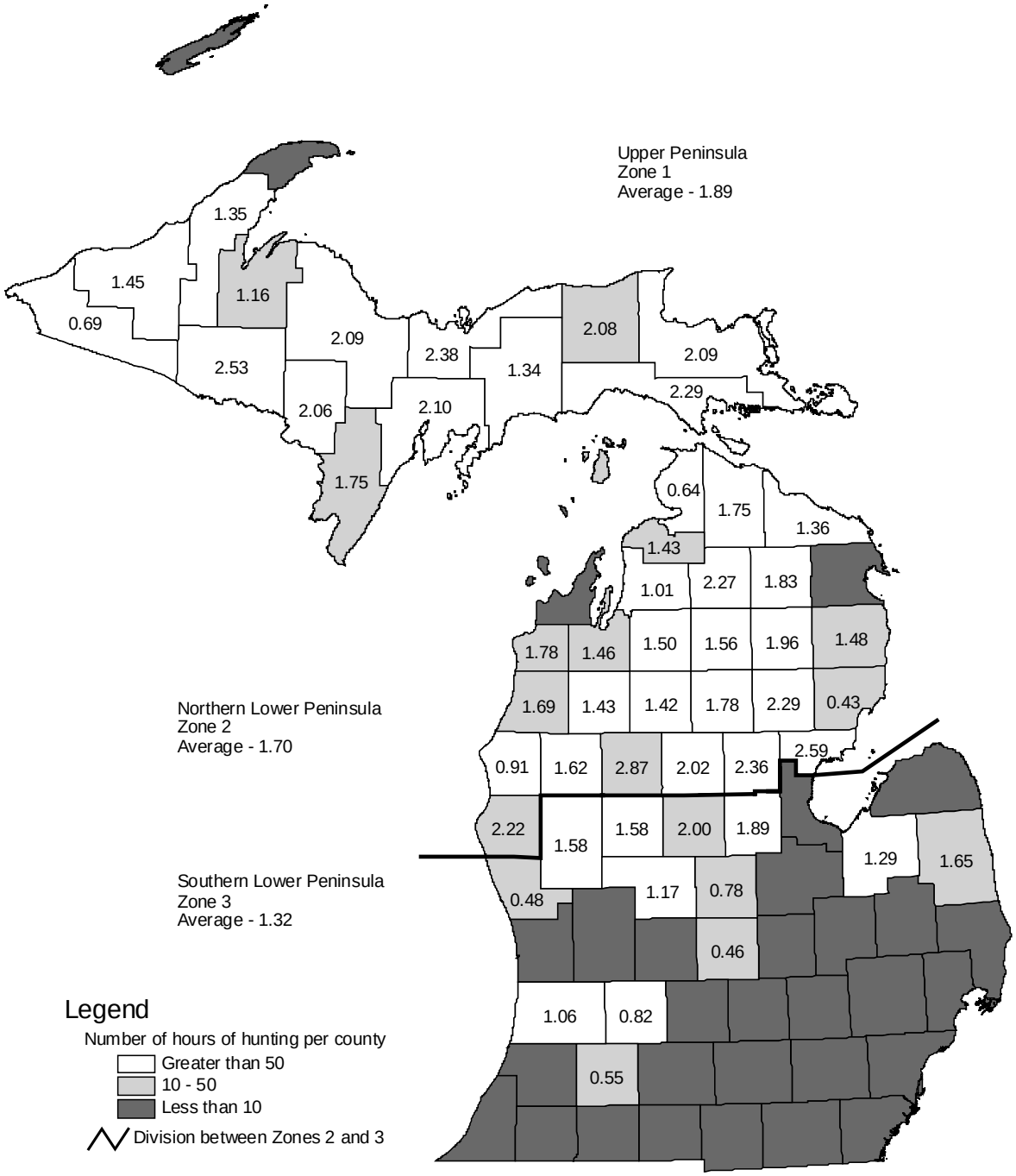
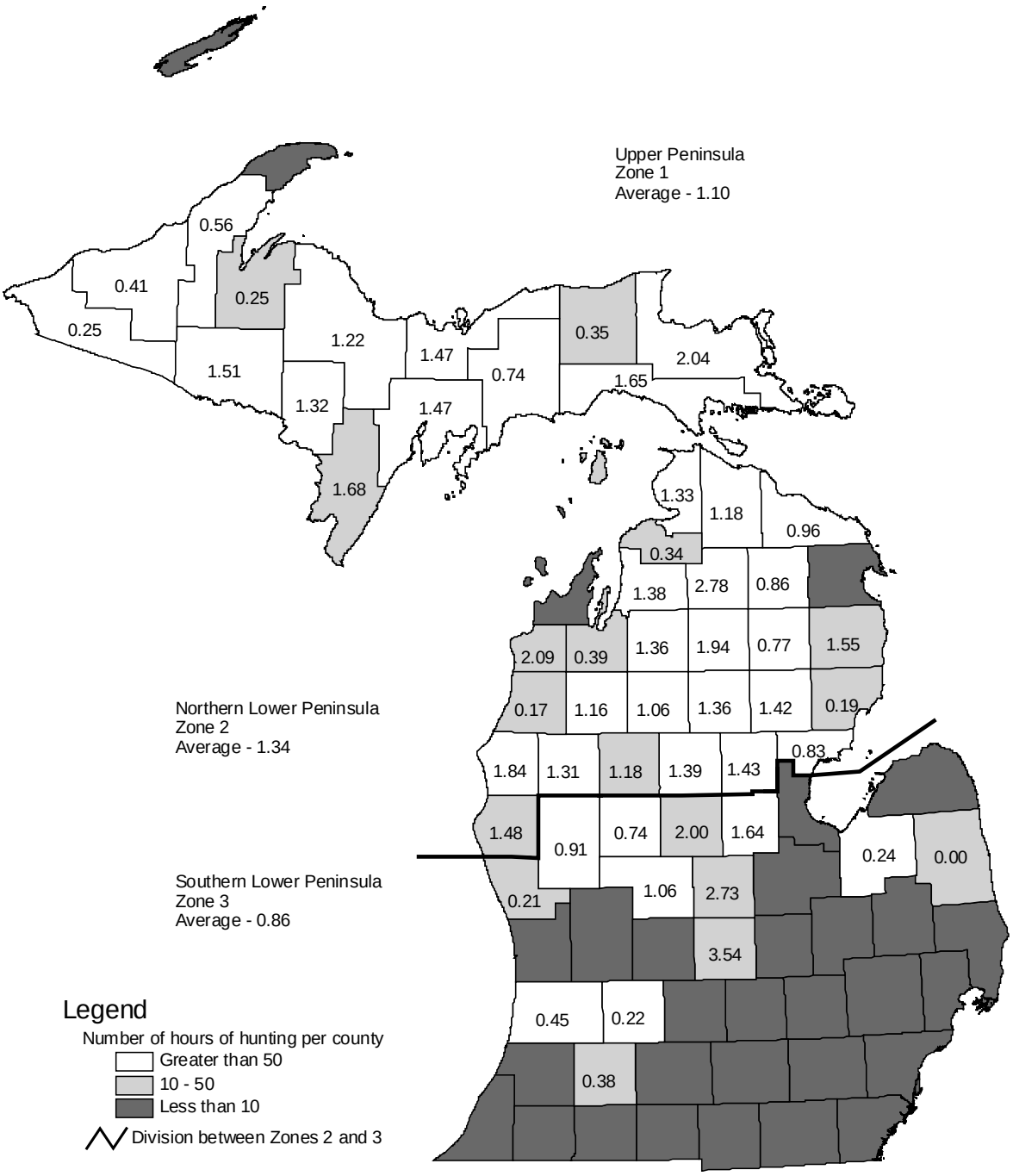



Figure 6. Mail survey estimates of the number of American woodcock hunters, hunter days, and harvest in Michigan, 1960-2001 (estimates not available for 1984).




Appendix A. Ruffed grouse flushed per hour by cooperators in 2001.




Appendix B. American woodcock flushed per hour by cooperators in 2001.